

## INTRODUCTION

The purpose of this Environmental Assessment (EA) is to review the possible environmental consequences associated with the construction and operation of a Health Protection Instrument Calibration Facility on the Savannah River Site (SRS). The proposed replacement calibration facility would be located in B Area of SRS and would replace an inadequate existing facility currently located within A Area of SRS (Building 736-A). The new facility would provide laboratories, offices, test equipment and the support space necessary for the SRS Radiation Monitoring Instrument Calibration Program to comply with DOE Orders 5480.4 (Environmental Protection, Safety and Health Protection Standards) and 5480.11 (Radiation Protection for Occupational Workers). The proposed facility would serve as the central site source for the evaluation, selection, inspection, testing, calibration, and maintenance of all SRS radiation monitoring instrumentation.

The proposed action has independent utility to SRS operations and would be necessary to support plant activities regardless of the makeup of the mission at SRS. As such, the proposed Health Protection Instrument Calibration Facility is treated as part of the preliminary Reconfiguration Programmatic Environmental Impact Statement (EIS) "No Action" alternative (DOE, 1991).

In accordance with National Environmental Policy Act (NEPA) regulations, the Department of Energy (DOE) has examined five alternative actions to the proposed action. These alternative actions include;

- No Action
- Renovation of the Existing Calibration Facility
- Expansion of the Existing Calibration Facility
- Alternative Construction Sites
- Use of Offsite Calibration Facilities

The proposed facility would be constructed on a currently undeveloped portion in B Area of SRS. The exact plot associated with the proposed action is a 1.2 hectare (3 acre) tract of land located on the west side of SRS Road #2. The proposed facility would lie approximately 4.4 km (2.75 mi) from the nearest SRS site boundary. The proposed facility would also lie within the confines of the existing B Area, and SRS safeguards and security systems. Archaeological, ecological, and land use reviews have been conducted in connection with the use of this proposed plot of land, and a detailed discussion of these reviews is contained herein. Socioeconomic, operational, and accident analyses were also examined in relation to the proposed project and the findings from these reviews are also contained in this EA.

### 1.0 PURPOSE AND NEED FOR ACTION

The Department of Energy's (DOE) primary mission at SRS includes the processing of nuclear materials for the United States Government. In order to safely accomplish this mission, it is imperative that the measuring instruments used to monitor radiation be accurate, reliable and readily available. In order to ensure that this support equipment (i.e., radiation measuring instrumentation) is properly calibrated and maintained, it is imperative that an adequate calibration facility be made available to SRS.

An adequate facility would provide for the calibration services, testing, maintenance and inspection of radiation monitoring instrumentation. This project would also provide all of the laboratories, offices, and test equipment necessary for the SRS Instrument Calibration Program to comply with DOE Orders 5480.4 and 5480.11.

The existing SRS calibration facility is located within A Area of SRS in building 736-A. This aging facility was constructed in 1952 and is no longer capable of supporting the growing number and complexity of the detection instruments currently being fielded at SRS. Compliance with DOE orders necessitates a modern, state-of-the-art facility which is capable of performing its mission in a timely and reliable manner. Dosimetry records from 736-A show that calibration technicians are not currently capable of complying with the SRS As Low As Reasonably Achievable (ALARA) goals and have received doses as high as 145 mrem<sup>a</sup> per month and occasionally must stand in radiation fields as high as 1,200 mrem/hr. The 736-A facility is currently not capable of complying with DOE Orders 5480.4 and 5480.11, or American National Standards Institute (ANSI) N323 (Radiation Instrument Test and Calibration) and 13.6 (Practice for Occupational Radiation Exposure Record System), per DOE Order 5480.4. Some of the areas of specific noncompliance are;

- The 736-A facility cannot accommodate radiation sources of sufficient strength to test and calibrate high range gamma instruments in accordance with ANSI N323.
- The 736-A facility has neither an x-ray laboratory for low energy instrument calibrations nor a beta beam calibration capability. Exposure rates in some parts of SRS are due primarily to these two forms of radiation.
- The 736-A facility does not have a low scattering laboratory for performing primary calibrations of gamma and neutron instruments and for determining extracamerel response<sup>b</sup>.
- Space limitations force the use of source-to-detector distances that are too small to ensure uniform radiation fields across photon and neutron monitoring instruments.
- The existing facility does not meet the necessary standards to qualify for accreditation by the National Voluntary Laboratory Accreditation Program (NVLAP), as administered by the National Institute of Standards and Technology. Receipt of NVLAP Accreditation is considered necessary to establish the credibility of the SRS Instrument Calibration Program.

The noncompliance issues listed above were noted by a Department of Energy, Headquarters (DOE-HQ) Tiger Team finding (SRL/RP.8-2), which stated that the long-term correction to the existing noncompliance with ANSI N323 requirements for calibration of high range instruments would be addressed through the design and construction of a new Instrument Calibration Facility. The need for a new facility and improved calibration practices was also specifically addressed by DOE-HQ, Office of Environmental, Safety and Health during a review conducted on the SRS Health Physics Program in 1988 (Ferlic et al., 1989).

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<sup>a</sup> mrem: The millirem = 1/1000 rem. The rem is a unit of radiation dose which takes into account the energy deposited in the body and the effectiveness of that energy to produce a biological effect. One rem of ionizing radiation will produce a biological effect approximately equal to that produced by one roentgen of x-ray or gamma radiation.

<sup>b</sup> This refers to the effects of radiation on those parts of a monitoring instrument other than the actual detector. Specifically related to the effects of radiation on an instrument's electronics.